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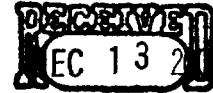
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COMMENT(S) COLOR PHOTOS & MAPS	

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MENZIE-CURA & ASSOCIATES, INC. COMMENTS ON SAUGET AREA 1 - HRS SCORING



154774

MENZIE-CURA & ASSOCIATES, INC.
COMMENTS ON SAUGET AREA 1
HRS SCORING

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Technical Report - Comments on Sauget Area 1 HRS Scoring
December 12, 2001

Introduction

This technical report provides comments on the United States Environmental Protection Agency's (USEPA) recent Hazardous Ranking System (HRS) scoring of Sauget Area 1 in St. Clair County, Illinois. The USEPA presented this scoring in the HRS Documentation Record and Supporting References (HRS Record). These technical comments address the reasons, which USEPA provides, for scoring components in the HRS Record.

The technical comments are based on our review of the HRS Record and in-depth knowledge of Sauget Area 1. The report analyzes the scoring on the basis of its conformance to USEPA's Hazardous Ranking System Guidance Manual (EPA OSWER, 1992a), the regulations in 40 CFR Part 300, and state-of-the-practice site assessment and scientific methods.

Figure 1 shows the general area and the seven sources referred to in the HRS record. They are:

HRS Record Source Number	Source Name	Description
1	Dead Creek Segment A	The northernmost segment of Dead Creek cleaned up in 1990
2	Dead Creek Segment B	A segment of Dead Creek currently undergoing cleanup
3	Dead Creek Segments C through the upper portion of F	Segments of Dead Creek currently undergoing cleanup
4	Site G	A former landfill on the west bank of Creek Segment B
5	Site H	A former landfill on the east side of Creek Segment B
6	Site I	A former landfill on the east bank of former Creek Segment A
7	Site L	A former impoundment on the east bank of Creek Segment B

As indicated below, our review found that USEPA's HRS scoring was inappropriately applied in several respects. Most importantly, the HRS scoring has been carried out for sites that are being

cleaned up and properly managed under agreements with the USEPA. Thus, the potential hazards implied by the HRS scoring process are, in fact, absent. Beyond the fact that hazards have and are being addressed, the HRS Documentation Package contains several critical errors that yielded scores well above those that would have been calculated had the site(s) been properly represented. Misrepresentations contained within the package include:

1. The mischaracterization of Dead Creek sediments as sources that are either impoundments (CS-B) or contaminated soils (CS-C through CS-F);
2. The incorrect manner in which an “observed release” was identified; and
3. The selection of an improper location for the Probable Point of Entry (PPE).

This report includes two sections:

Section 1: Technical Comments; and

Section 2: Re-scoring Based on Technical Comments.

We re-scored Sauget Area 1 based on our review of the HRS Record and site-specific observations made over the last several years. HRS Guidance was adhered to in re-scoring the site. When USEPA’s misrepresentations are corrected, the site score for the aggregated sources decreases to 4.81. The more appropriately scored individual sources decrease to 0 for sources that are cleaned up or nearly cleaned up (Sources 1, 2, and 3), to 2.73 for Sources 4, 5, and 6, and to 4.85 for Source 7.

1.0 Technical Comments

We have organized the technical comments around seven issues that are either misrepresentations of site conditions, inappropriate application of HRS Guidance, or errors of interpretation on the part of the writers of the HRS Documentation Package for Sauget Area 1.

1.1 Sources in Dead Creek

The HRS Documentation Package for Sauget Area 1 refers to parts of Dead Creek as sources in the following way:

- Source 2 - Dead Creek Segment B (CS-B) is described as a “surface impoundment”.
- Source 3 - Dead Creek Segments C, D, E, and part of F (CS-C, CS-D, CS-E, and CS-F to the PPE) is described as “contaminated soil”.

These are misrepresentations of these areas with respect to their current status, history, and physical characteristics. It appears that the main purpose for defining these areas as either an impoundment or as soils is that they can be included in the scoring package as "sources." HRS Guidance is specific about what is and what is not a source:

Source: Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that may have become contaminated from hazardous substance migration. ***In general, however, the volumes of air, ground water, surface water, and surface water sediments that may have become contaminated through migration are not considered sources.***

It is clear that the authors of the HRS Documentation Package for Area 1 have chosen to use the term "soils" rather than "sediments" for Dead Creek for the purpose of including these areas as sources. Characterization of creek sediments as soils for the purpose of the HRS scoring is at variance with how the Agency has been considering and discussing the media in Dead Creek during the course of the Engineering Evaluation/Cost Analysis (EE/CA) and Remedial Investigation/Feasibility Study (RI/FS) and during the implementation of the sediment cleanup program that is near completion for CS-B, CS-C, CS-D, CS-E, and CS-F.

The HRS Documentation Package misrepresents conditions in Dead Creek in two ways:

1. The media described as "sources" either no longer exist or will no longer exist in Dead Creek (as of February 2002); and
2. The description of the historical conditions in Dead Creek as either representing an impoundment (in the case of CS-B) or as soils in the case of CS-C through CS-F is a misrepresentation of what was actually there.

These points are elaborated below.

1.1.1 Creek Sediments Have Been Cleaned Up

The conditions described in the HRS Documentation Package as "sources" in Dead Creek (Sources 2 and 3) will no longer exist in Creek Segments B, C, D, E, and F as of February 2002¹. USEPA has been overseeing this cleanup and knowledge of these actions should have been available to the authors of the HRS Documentation Package well before publication of that document.

¹ At this writing (December, 2001) the sediments from CS-B, CS-C, CS-D, and CS-E have already been removed.

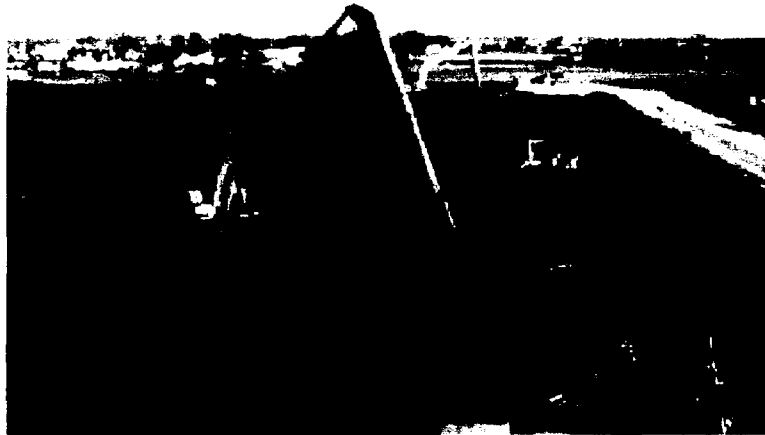
While Solutia was performing the EE/CA and RI/FS, Solutia was also conducting cleanup in the Dead Creek area. These actions were pursuant to unilateral administrative orders (UAO) issued by USEPA. Pursuant to the first UAO, issued on June 21, 1999, Solutia replaced culverts in Dead Creek to improve hydraulic efficiencies, and Solutia conducted related studies to ensure the success of the project.

Pursuant to the second UAO, issued on May 31, 2000, and amended on August 29, 2001, Solutia has been excavating contaminated sediments from Dead Creek (USEPA, 2001), and encapsulating the sediments in a lined, permanently engineered containment cell. USEPA determined that completion of this project "will address risks posed by the contaminated sediments in Dead Creek" (USEPA, 2001). In November 2000, Solutia began dewatering Dead Creek, and Solutia finished constructing the containment cell in September 2001. Sediment excavation began in early summer 2001. All sediments in Creek Segments B through F are scheduled to be removed by the end of February 2002.

The removal process had involved dewatering the creek; water management followed by excavation of the sediments in the creek is shown below:



The excavated sediments from Dead Creek have been placed in an approved lined containment cell as shown below:



The cleanup will result in excavation of sediments from Dead Creek Segments B through F as well as Site M². The area which the HRS Documentation Package used to support an “observed release” at the PPE is included in this cleanup and will no longer be present. The progress of the cleanup effort along Dead Creek is depicted below.



We note that while the HRS Documentation Package still inappropriately identifies Creek

² Site M is not scored in the current listing proposal.

Segment A (Source 1) as a source, it is not counted as a contributor to the score. It scored "0". Using the same rationale, Creek Segments B through F should also be scored as "0". This reflects current site conditions. The implications for scoring are discussed in Section 2.1.3.

1.1.1.1 Residual Risk following Cleanup

Human health and ecological risk assessments have been performed for Dead Creek and Sites G, H, I, and L and these have been submitted to USEPA. As agreed to by the Agency, the assessments excluded CS-B through a portion of F as well as Site M because these were all part of the planned cleanup described above in accordance with the UAO. Thus, the assessments evaluated residual risk.

The results of the Human Health Risk Assessment and Short-Term Risk Assessment have been accepted by USEPA. These assessments indicate that the only carcinogenic risk above USEPA's target risk range of 10^{-6} to 10^{-4} was to an outdoor worker at Site I. This finding was due to dioxin in surface soil. The non-carcinogenic risks identified were to outdoor workers or construction workers due to PCBs in surface soil at Site I and to construction workers only (i.e., someone working unprotected from hazardous materials exposure) at Sites G, H, and L. In their current condition and barring construction work, Dead Creek Segment F including the Borrow Pit and Sites G, H, and L do not pose an unacceptable human health risk. USEPA has accepted this assessment, an evaluation that is at variance with the hazards presumed to be present in the HRS Documentation Package.

The results of the Ecological Risk Assessment indicated that a low potential for risk to fish and piscivorous birds that eat fish is present in the Borrow Pit due the presence of mercury in fish tissue. However, a review of these particular data shows that they are comparable to what is found in other Illinois water bodies. Currently, there are no fish in the Borrow Pit due to the dry conditions.

The HRS Documentation Package infers a hazard based on the surface water migration pathway and bioaccumulation of toxic compounds in fish. Prior to cleanup of CS-B through CS-F, such pathways were essentially negligible for the areas identified as targets in the HRS Documentation Package. Now that the sediments have been removed from Dead Creek, any source-related concentrations will only decrease. Therefore, the actual and not hypothetical conditions, the sources identified in the HRS Documentation Package pose a negligible hazard or risk to human health or ecological receptors via the surface migration pathway.

1.1.2 Dead Creek Materials as Sediments

The conditions described for Dead Creek in the HRS Documentation Package are no longer present. Therefore the scoring and some of these comments on aspects of the scoring are to a

large extent “hypothetical.” However, because the USEPA has apparently chosen to describe historical conditions in a particular way in order to achieve a high enough score for listing, it is important to point out that these historical conditions have been misrepresented in the package. The two major misrepresentations include describing CS-B (Source 2) as an impoundment and the sediments in CS-C through CS-F as contaminated soils.

1.1.2.1 Creek Segment B was not an impoundment

The USEPA incorrectly scored the waste characteristics scoring element due to its misclassification of Source 2 as a surface impoundment. Source 2, also known as Dead Creek Segment B, extends from Queeny Avenue to Judith Lane (Figure 1). The available definitions of surface impoundments contain similar key phrases indicating that an impoundment is designed or intended to store fluid wastes. For example:

“...designed to hold accumulated liquid wastes...” (USEPA, 1992; 40CFR260.10),
“...which are designed to hold liquid or liquid-containing materials...(Arizona DEQ, 1996), “...used primarily for storage, treatment, or disposal of wastes in the form of fluids...” (Piskin et al., 1980; USEPA, 1983),
“...is intended to contain liquid wastes...” (USEPA, 1992),
“...for storing, treating or disposing of wastewater...” (USEPA, 2001),
“...that is used for storage, treatment, or disposal of waste...” (CREST, 1996),
“...into which flowing wastes, such as liquid wastes or wastes containing free liquids are placed” (USEPA, 2001).

Specifically, the USEPA Hazard Ranking System Guidance Manual defines a surface impoundment as:

[A] topographic depression, excavation, or diked area, primarily formed from earthen materials (lined or unlined) and designed to hold accumulated liquid wastes, wastes containing free liquids, or sludges that were not backfilled or otherwise covered during periods of deposition; depression may be dry if deposited liquid has evaporated, volatilized or leached; structures that may be more specifically described as lagoon, pond, aeration pit, settling pond, tailings pond, sludge pit, etc.; also a surface impoundment that has been covered with soil after the final deposition of waste materials (i.e. buried or backfilled).

This definition derives from the Resource Conservation and Recovery Act (RCRA) definition of a surface impoundment (40 CFR 260.10):

“...a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined

with man-made materials) which is designed to hold an accumulation of liquid wastes, or wastes containing free liquids, and which is not an injection well."

The HRS Guidance Manual (p. 44) further emphasizes that surface impoundments are distinguished by two characteristics: the waste management unit is intended to contain liquid wastes and lacks a soil cover.

The HRS Record does not demonstrate that Source 2 (CS-B) was ever operated as a surface impoundment. Creek Segment B was hydraulically connected to Creek Segment A before that segment was cleaned up and filled in; CS-B continues to be hydraulically connected to Creek Segment C via a culvert under Judith Lane. Although this culvert has been ineffectively blocked at times in the past, the HRS document acknowledges that these actions have not been successful, and flow has been observed from Creek Segment B to Creek Segment C. There is no indication in the record that Source 2 was "designed to hold an accumulation of liquid wastes" as required by USEPA's definition of a surface impoundment.

The implications of scoring CS-B as "contaminated soil" are discussed in Section 2.2.1.

1.1.2.2 The Media at the Bottom of Dead Creek are Sediments

The solid material at the bottom of Dead Creek is sediment. The USEPA throughout the EE/CA and RI/FS process and the UAO describes this material as sediment.

Both the Illinois Environmental Protection Agency (IEPA) and USEPA provide descriptions of the media on the creek bottom in CS-B through CS-F as contaminated sediments, rather than soils. For example, IEPA, in its 1992 CERCLA Screening Site Inspection Report, refers to Dead Creek sources as "contaminated sediments." The second UAO, issued on May 31, 2000, and amended on August 29, 2001 for the removal work in Dead Creek lends further support to this description. The language provided by USEPA on page 10 of the amended UAO is as follows:

Respondents shall perform, at a minimum, the following response activities:

- A. Prepare a Time Critical Removal Action Work Plan (also referred to herein as "Work Plan") and implement the Removal Action in accordance with the Work Plan to mitigate the threats posed by presence of contamination in Dead Creek sediments and certain adjacent soils and their potential migration via overflow and flood waters from the Site, as described in Section III, "Findings of Fact" of this Order. As more specifically described below, this Work Plan shall provide for: 1) the removal of materials from CS-B (creek sediments, creek bed soils and flood plain soils); CS-C, D, E, a portion of F (non-native creek sediments only); the basin area at the lift station; and Site M (pond sediments and pond bottom soils) in Sauget Area One, while minimizing adverse impacts to area

wetlands and habitat; 2) the proper handling, dewatering, treatment and placement of such materials in the on-site Containment Cell; 3) a plan for management of Dead Creek storm water; 4) the sampling and analysis of areas where materials has been removed, for the purpose of defining remaining contamination; 5) the placement of membrane liner material over CS-B and in all other excavated areas where, based on post removal sample results, such liner is determined to be necessary; and 6) a design for the Containment Cell which will provide adequate protection to human health and the environment.

The parties involved in the assessment of Dead Creek and in the cleanup of contaminants agree that this effort is focused on sediments. Even the HRS Documentation Record supports the classification of Source 3 (Creek Segments C through F) as sediments contaminated by migration. The samples relied upon in the HRS scoring package are sediment samples taken from various creek segments. See HRS Documentation Record, at 33-40. The HRS Documentation Record does not reference even a single soil sample in its description of Source 3.

The description of the media in Dead Creek as sediment is also consistent with how this term is commonly used by scientists and environmental managers dealing with sediment contamination issues. Further, the sediment on the bottom of Dead Creek does not fit the definition of soil given in the HRS Guidance.

Sediment has been defined in a number of ways, all of which have common features:

The USEPA's Sediment Management Strategy defines contaminated sediments as soils, sand, organic matter, or minerals that accumulate on the bottom of a water body and contain toxic or hazardous materials that may adversely affect human health or the environment. They may wash from land, be deposited from the air, erode from aquatic banks or beds, or form from underwater breakdown or buildup of minerals. USEPA defines contaminated sediments as aquatic sediments that contain chemical substances in excess of appropriate geochemical, toxicological, or sediment quality criteria or measures, or are otherwise considered to pose a threat to human health or the environment.

The Soil Science Society (2001) defines sediment as transported and deposited particles or aggregates derived from rocks, soil, or biological material. This is in contrast to the definition they give for soil which is described as the unconsolidated mineral or organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.

Where states have defined sediments they are typically described as follows (from the Massachusetts Department of Environmental Protection (1996)): Sediment means all

detrital and inorganic or organic matter situated on the bottom of lakes, ponds, streams, rivers, the ocean, or other surface water bodies. Sediments are found: a) in tidal waters below the mean high waterline as defined in 310 CMR 10.23; and b) below the upper boundary of a bank, as defined in 310 CMR 10.54(2) which abuts and confines a water body. All other unconsolidated earth in wetlands, including the 10-year floodplain, is considered soil.

Gross (1972) describes sediment as particulate organic and inorganic matter, which accumulates in a loose, unconsolidated form. It may be chemically precipitated from solution, secreted by organisms or transported from land by air, ice, wind, or water and deposited.

Libes (1992) describes sediment as particulate inorganic or organic particles that accumulate in loose, unconsolidated form.

Pinet (1992) describes sediment as rains or particles of either organic or inorganic origin deposited by air, water or ice.

DiToro (2001) describes sediments in terms of their formation. He states that sediments are formed at the bottom of water bodies by the deposition of particles from the overlying water. The particles either originate from soil and other suspended matter that are carried in with the inflowing water or from direct discharges (allochthonous particles) or are formed within the water body itself (autochthonous particles) as a result of the growth, metabolism, and death of plants and animals. These particles settle and eventually become part of the consolidated material at the bottom of the water body. This mix of particles and water makes up the sediment.

Power and Chapman (1992) describe sediments as all detrital, inorganic, or organic particles eventually settling on the bottom of a water body. Therefore, sediment is generally a matrix of materials and can be relatively heterogenous in terms of its physical, chemical, and biological characteristics.

All these descriptions of sediments share the following common features:

1. Sediments include materials that accumulate or settle on the bottom.
2. Sedimentary material and associated chemicals may reach the bottom in a variety of ways but are typically transported there from someplace else.

These features describe the historical sedimentary material on the bottom of Dead Creek and the contaminants that were once present there. This also is consistent with how sediments are considered in the HRS Guidance. Specifically, the HRS Guidance considers sediments as media

that **may have become contaminated through migration**. Clearly, this is how the sediments in Dead Creek Segments C through F came to be contaminated. These features can be contrasted to the definition of contaminated soils provided in the HRS Guidance which states that a "contaminated soil" is a soil onto which available evidence indicates a hazardous substance was spilled, spread, disposed, or deposited.

For the reasons given above, the media on the bottom of Dead Creek are sediments. This is consistent with how this medium has been viewed by the USEPA (outside of the HRS Documentation Package), is consistent with common definitions of sediment, and is consistent with HRS Guidance.

1.1.2.3 Conclusions regarding Sources

Dead Creek Segments CS-B through CS-F should be eliminated from the scoring package as "sources" because:

1. The contaminated medium in these locations has been/is being cleaned up and these locations currently pose no hazard to humans or ecological receptors.
2. The cleanup eliminates the potential for future transport of contaminants to the targets identified in the HRS Documentation Package.
3. The historical conditions that existed prior to cleanup do not meet the HRS definitions for sources.

The implication of these conclusions on scoring is discussed in Section 2.1.3.

1.2 Observed Release

The "observed release" is incorrectly represented and used in the HRS scoring for Sauget Area 1. Errors were made in the:

1. Selection of the location for the Probable Point of Entry (PPE); and
2. Determination of background.

As will be discussed below, these two errors have important implications for the scoring of Sauget Area 1. Our comments on this aspect of the scoring are based on our observations made over the past several years of hydrologic conditions and on our familiarity with the data for creek sediments. Our observations began in the mid-1990s and continued through 2001.

1.2.1 Selection of the PPE Location

USEPA has placed the PPE in Creek Segment F (Figure 1). They correctly recognize that other creek segments are, in fact, intermittent and as such do not qualify as surface water bodies. However, they fail to recognize that Creek Segment F is also intermittent. Section 4.1.1 of the HRS Documentation Record for Sauget Area 1 provides the following rationale for designating the location of the PPE and the estimate of the overland segment:

The surface water migration pathway for the Sauget Area 1 site consists of runoff routes through Dead Creek, a wetland along Dead Creek, Old Prairie du Pont Creek, the Cahokia Chute of the Mississippi River (Cahokia Chute), and the Mississippi River (Figure 1). Water levels in the upper portion of Dead Creek vary substantially and the creek becomes a dry ditch during periods of low precipitation (Ref. 3a, p. 2-8; Ref. 24, pp. 17, 18). Therefore, the upper portion of Dead Creek is evaluated as an intermittent stream. **The in-water segment begins at the wetland along Creek Segment CS-F. The wetland along CS-F is forked, with the northeastern and southern forks being a part of CS-F (Figure 1; Figure 2; Ref. 25; Ref. 63, pp. 10-14, 33-41).** Although the northwestern fork of the wetland is sometimes referred to as Borrow Pit Lake, the wetland is continuous and is considered a single wetland (Ref. 10, p. 125; Ref. 25; Ref. 63, pp. 10-14, 33-41).

The overland segment of the surface water migration path consists of runoff routes from the Sauget Area 1 sources to the PPE of hazardous substances to surface water at the wetland along CS-F (Figure 2). Because of surface topography and the proximity of sources to Dead Creek, each of the sources drains into the creek directly (Ref. 8). Source 1 (CS-A) formerly drained directly into Source 2 (CS-B) (Ref. 13, p. 19). Before the culvert at Judith Lane was reportedly sealed, Source 2 drained directly to Source 3 (CS-C, CS-D, part of CS-E) and subsequent downstream creek segments (Ref. 11; Ref. 12; Ref. 13, p. 19). Additionally, water is believed to flow downstream past the blocked culvert when it reaches an undetermined level in Source 2 (Ref. 13, p. 19). The overland segment continues south of Source 3, through the remaining portion of CS-E and the northern portion of CS-F. **The overland segment terminates at the perennial wetland in CS-F, where the in-water segment begins. The portion of Dead Creek between Source 3 and the wetland in CS-F is also considered intermittent because it has been observed without water (Ref. 24, p. 19).**

The in-water segment of the surface water migration pathway begins at the PPE and consists of five segments. **The PPE is the point where Dead Creek meets the wetland in Creek Segment CS-F.** The wetland is denoted on a U.S. Fish and Wildlife Service

NWI map as a palustrine, forested wetland and was delineated by the Illinois Department of Conservation (Ref. 24, p. 4, 5; Ref. 25). Palustrine, forested wetlands meet the definition of a wetland for HRS purposes (Ref. 1, Table 4-24, p. 51625).

The errors that USEPA has made in representing conditions are:

1. Describing the wetland along Creek Segment F as part of a "forked wetland" which has the Borrow Pit Lake acting as the other part of the fork such that they act as one wetland; according to this conceptualization, any water flowing in these two forks would meet and continue on toward Old Prairie du Pont Creek.
2. Treating Creek Segment F as a surface water body and thus something other than an intermittent stream.

We made observations on flow and environmental conditions in Dead Creek in 1996, September and October 1999, September 2000 through November 2000, and November 2001. Our observations of Creek Segment F indicate that it is in fact an intermittent stream like the other creek segments (B through E). Further, flow is intermittent throughout the entire remaining length of Dead Creek leading to Old Prairie du Pont Creek. Therefore, the correct location for the PPE would be in Old Prairie du Pont Creek. The HRS Scoring document has not provided surface water, sediment, or biota data for this location and therefore, has not documented an "observed release".

The picture provided below was taken in 1999 and shows the lower portion of Dead Creek where it reaches the Borrow Pit. There was no flow. There was also no flow from this location toward Old Prairie du Pont Creek.



The wet bottom of Dead Creek observed in 1999 is essentially the same as that observed for other Dead Creek segments (i.e., B through E) treated in the HRS Documentation Package as intermittent streams.

The lack of flow in Dead Creek Segment F was also documented in November 2001. The picture provided below shows what Dead Creek looks like before reaching the Borrow Pit area. As can be seen, the creek is dry.



Observations made during 2001 indicate that the Borrow Pit does not currently support a fish population. It is, in fact, dry. Fish-based food webs do not currently exist there. During 1999 and 2001, we also made observations of the overland flow conditions leading from CS-F to Old Prairie du Pont Creek. Each time we examined this area, it was dry. There is no surface water body as described on p. 207 of the HRS Guidance between CS-F and Old Prairie du Pont Creek. The Guidance specifically excludes as surface water bodies intermittent streams (and rivers) in areas with rainfall in excess of 20 inches per year and intermittent ponds and lakes regardless of mean annual rainfall. CS-F itself cannot be considered a surface water body under the guidance, as it is an intermittent stream like the other Dead Creek segments. The following picture shows

Dead Creek at its terminus next to the levee that separates Dead Creek from Old Prairie du Pont Creek. The creek is dry.



The HRS Documentation Package for Sauget Area 1 relies on four references to support its view that CS-F is a surface water body.

Reference	How Used by USEPA	Comments
10. Solutia, Inc. (O'Brien and Gere Engineers, Inc). EE/CA and RI/FS Support Sampling Plan, Sauget Area 1, Sauget and Cahokia, Illinois. June 1999. 166 pages, 24 tables, 11 figures.	Although the Northwestern fork of the wetland is sometimes referred to as Borrow Pit Lake, the wetland is continuous and is considered a single wetland (Ref. 10, p. 125.)	Page 125 of the referenced document <i>does not</i> include the statement made by USEPA in the HRS Documentation Package. Instead, the statement appears to be an interpretation made by the writer of the HRS document.
24. Illinois Department of Conservation (IDOC). Memorandum regarding wetland determinations for Dead Creek near Sauget, St. Clair County, Illinois (with photographs taken by IEPA attached). From W.E. McClain, Division of Natural Heritage. To Tom Crause, IEPA. July 23, 1992. 19 pages.	The PPE is the point where Dead Creek meets the wetland in creek segment CS-F. The wetland is denoted on a U.S. Fish and Wildlife Service NWI map as a palustrine, forested wetland and was delineated by the Illinois Department of Conservation (Ref. 24, p. 4, 5).	The HRS Documentation Package suggests that CS-F is distinct from the other creek segments. However, the reference cited (i.e., a wetland determination by Mr. McClain) <i>does not</i> state this on pp 4 or 5. To the contrary, the cited reference considers all the stream segments to be somewhat similar in the types of vegetation present. Mr. McClain includes his survey sheets that describe the percent of vegetation that fall into classifications representative of wetlands. The percentages for Dead Creek segments are B (80%), C (100%), D (100%), E (78%), and F (100%).

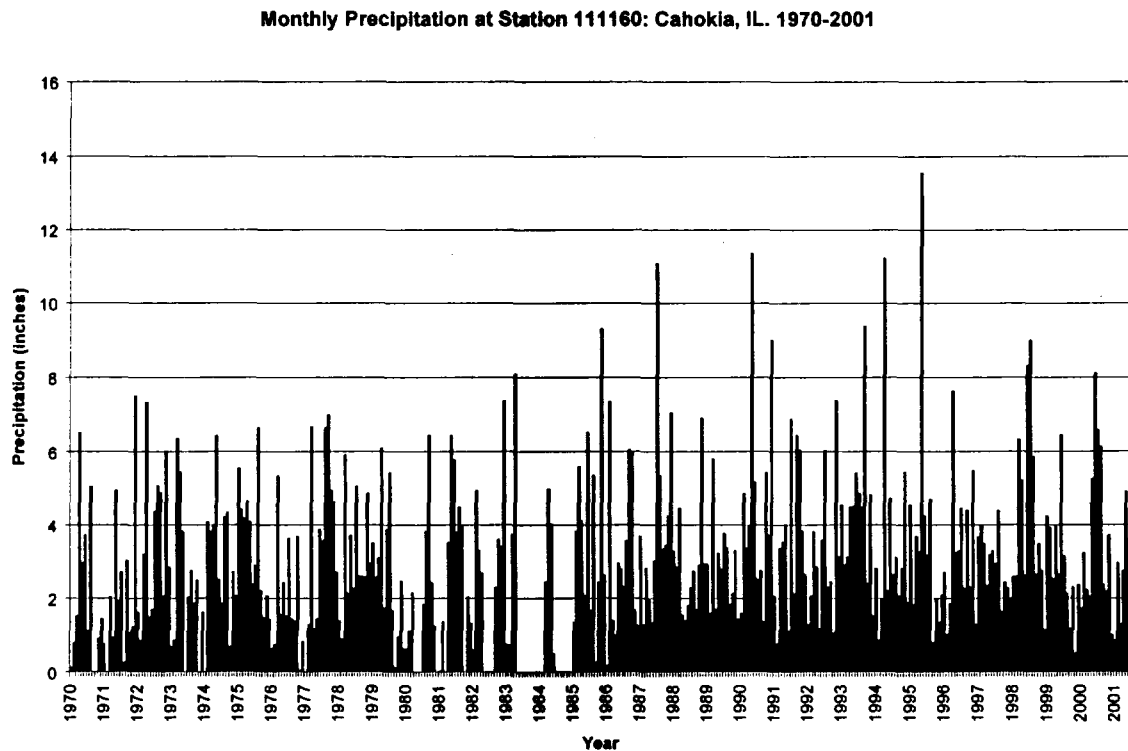
MENZIE-CURA & ASSOCIATES, INC. COMMENTS ON SAUGET AREA 1 - HRS SCORING

Reference	How Used by USEPA	Comments
<p>25. U.S. Department of the Interior (DOI). National Wetlands Inventory Map, Cahokia, Illinois-Missouri. Fish and Wildlife Service. March 1985. Modified by PRC. 1 page.</p>	<p>The in-water segment begins at the wetland along Creek Segment CS-F. The wetland along CS-F is forked, with the northeastern and southern forks being a part of CS-F (Ref. 25). Although the northwestern fork of the wetland is sometimes referred to as Borrow Pit Lake, the wetland is continuous and is considered a single wetland (Ref. 25).</p> <p>The wetland is denoted on an U.S. Fish and Wildlife Service NWI map as a palustrine, forested wetland (Ref. 25).</p>	<p>This reference provides a poor copy of a map that appears to have been annotated presumably by PRC and not by the Department of the Interior. The reference does not include any statements about a forked wetland. It does not include a specific reference to "Borrow Pit Lake". The narrative provided in the HRS Documentation Package appears to be an interpretation made by the writer of that document and not a statement provided by an authoritative source.</p>
<p>63. Solutia, Inc. Sample location maps for Sauget Area 1 RI/FS. (Includes Analytical data results). July 2000. 42 pages.</p>	<p>The wetland along CS-F is forked, with the northeastern and southern forks being a part of CS-F (Ref. 63, pp. 10-14, 33-41). Although the northwestern fork of the wetland is sometimes referred to as Borrow Pit Lake, the wetland is continuous and is considered a single wetland (Ref. 63, pp. 10-14, 33-41).</p>	<p>The cited reference does not include these statements. Instead, the statement reflects an interpretation on the part of the HRS writer.</p>

Based on site visits and reviews of conditions for Dead Creek, it appears that the first qualifiable surface water body for evaluating the observed release to surface waters is Old Prairie du Pont Creek. Selection of this water body as a qualifiable surface water body is not only consistent with HRS Guidance but is consistent with other aspects of the HRS Documentation Package for Sauget Area 1. Therefore, the appropriate location for the PPE is Old Prairie du Pont Creek. The HRS scoring package does not provide data for Old Prairie du Pont Creek, and therefore there is no observed release for Sauget Area 1. Given the low concentrations of contaminants in Dead Creek Segment F and the Borrow Pit, and the frequent lack of water in these water bodies, it is unlikely that significant concentrations of contaminants attributable to Sauget Area 1 have reached Old Prairie du Pont Creek.

A key element in the scoring is related to bioaccumulation of chemicals into fish with subsequent potential exposures to humans and wildlife. As noted in the HRS Documentation Package, Old Prairie du Pont Creek, the Cahokia Chute, and the Mississippi River are the locations that the USEPA believes may be used for fishing. There currently are no fish in the Borrow Pit as it is dry.

Observations on the intermittent flow conditions and waters in Dead Creek and the Borrow Pit seen during the past several years are not unusual. Previous surveys have documented the dry conditions in Dead Creek and the HRS Documentation Package also acknowledges that these are characteristic. A review of the rainfall records for Cahokia shows that rainfall during the 1998 to 2001 period (Angel, 2001) has been fairly typical as indicated by the monthly rainfall statistics for Cahokia given below.



As can be seen from the above figure, there was comparatively lower rainfall during the 1970s and 1980s as compared to the 1990s. Therefore, we expect that Dead Creek and the Borrow Pit are likely to be dry environments over extended periods of time. Note that there were peaks in rainfall during the mid-1990s. Extensive flooding occurred in 1993 and reflected rainfall occurring primarily in the Mississippi watershed to the north of St. Louis. These peaks likely result in the intermittent presence of water in Dead Creek and the Borrow Pit.

A memorandum authored by Bill McClain of the Illinois Department of Conservation dated July 23, 1992 to Tom Crause and dated received at the Illinois Department of Natural Resources on July 27, 1992 contains observations of Creek Segments B through F, indicating that a low water level is a normal condition in Dead Creek. Historical information obtained from a 1984 survey conducted in the American Bottoms by IEPA (1989) indicated that 12 out of 14 streams were at low flow conditions in summer.

Historical discharge data was obtained from the United States NWIS-W Data Retrieval system, maintained by the US Geological Survey (USGS), for other creeks in St. Clair County Illinois. The closest of these to Dead Creek were Canteen Creek (1972-1982), Mud Creek (1972-1982),

and Richland Creek (1989-1999). A review of the historical discharge data from these creeks indicates a high variability in discharge over each year. However, for a large portion of each year, discharge is very low, often near zero. Both of these patterns occur each year, suggesting that low to zero flow conditions, as seen in Dead Creek are common and typical of the area. The implications of this on scoring are discussed in Section 2.1.2.

1.2.2 Calculation of Overland Distances

A change of the location of the PPE to the nearest qualifiable surface water body , Old Prairie du Pont Creek, changes the calculations of the length of the overland component. In the following table, we show the distances given in the HRS Documentation Package for overland segments to surface waters (defined in the HRS Package as CS-F). We then provide the calculations for distance to the actual closest non-intermittent surface water body, Old Prairie du Pont Creek.

Creek Segment	Distance in feet to PPE Given in HRS Documentation Package Assuming that CS-F was a surface water body	Distance in feet to PPE for first non-intermittent Surface Water Body (Old Prairie du Pont Creek)
Dead Creek from the end of Creek Segment B at Judith Lane to the PPE	8,500	14,466
Southern limit of Site G (HRS Source 4) on bank of CS-B NE through Dead Creek (through 3/4 of Source 2 and all of Source 3) to the PPE	NE	15,365
Distance from Site H (HRS Source 5) within Dead Creek as measured from Queeny Avenue to the PPE	10,450	16,416
Distance from Site I (HRS Source 6) within Dead Creek as measured from Queeny Avenue to the PPE	10,450	16,417

Creek Segment	Distance in feet to PPE Given in HRS Documentation Package Assuming that CS-F was a surface water body	Distance in feet to PPE for first non-intermittent Surface Water Body (Old Prairie du Pont Creek)
Distance from Site L (HRS Source 7) within Dead Creek as measured from ½ the distance down CS-B to PPE	9,450	15,416

The calculated distances between potential site sources and Old Prairie du Pont Creek are all greater than 10,560 feet, i.e., a distance of two miles. In accordance with HRS Guidance, this is beyond the distance that should be evaluated for potential releases to a surface water body. Further, data provided in the HRS documentation show that concentrations of chemicals are essentially at background before Old Prairie du Pont Creek is reached.

Nothing presented in the HRS Documentation Package indicates that there is a current release to any surface water body that USEPA believes is used for recreational fishing (Old Prairie du Pont Creek, Cahokia Chute, or the Mississippi River), as was erroneously concluded by USEPA, or that indicates any potential hazard to these surface water bodies.

Surface water data collected for the EE/CA and RI/FS for Sauget Area 1 do not indicate that the bioaccumulative compounds detected in Dead Creek sediment (e.g., PCBs) are migrating from the sources. In addition, surface water samples from CS-F upstream of the borrow pit lake did not have concentrations of PCBs, cadmium, lead, mercury, copper, or zinc above the National Recommended Water Quality Criteria.

With regard to fish, IEPA (1989) determined that, for several organic compounds including total PCBs, the local fish population is not accumulating these substances above United States Food and Drug Administration (FDA) Action Levels. The IEPA (1989) conducted an intensive survey of the concentrations of substances in fish tissue throughout the American Bottoms Basin. This measurement program demonstrated that the concentrations of several organic contaminants in fish tissue in Prairie du Pont Creek are similar to the background fish tissue bioaccumulation of organic contaminants in fish throughout the American Bottoms. In particular, these data show that there is no transport and uptake of PCBs to the biota of the Prairie du Pont Creek from any upstream sources in excess of local background in the American Bottoms. The report also demonstrates that these compounds are below FDA Action Levels.

Given that the sediments are actually being removed from contaminated portions of Dead Creek and that other sources are being dealt with, the potential for any future hazard is negligible. In other words, no future increases in concentration would occur and decreases of already low levels are expected.

The implications of this on the HRS scoring are discussed in Section 2.1.2. Given no observed release and a distance of over two miles between the sources and the PPE, the score decreases to 9.7, well below the 28.5 threshold.

1.2.3 Location of Background and Release Samples

1.2.3.1 USEPA Selected Incorrect Background and Release Samples based on Site Hydrogeology

The HRS Documentation Package relies on data for the Borrow Pit as “background” for evaluating the observed release described in the overland migration/flood component (Section 4.1). Two sets of comparisons are made using two groups of “background” samples:

1. USEPA states that: Sample F107 was collected from the northwestern portion of the wetland. The wetland is forked and this portion of the wetland is not expected to be influenced by contamination from Dead Creek (Ref. 25; Ref. 65, p.2-10).
2. USEPA states that: During the RI/FS performed by Solutia, three sediment samples were collected in the northwestern fork of the wetland along CS-F to establish background concentrations, BPL-ESED-S1, BLP-ESED-S2, and BPL-ESED-S3 (Ref. 10, p. 129; Ref. 39, pp. 3-7). This portion of the wetland is upgradient of the outlet of Dead Creek to the wetland and is not expected to be influenced by contamination from Dead Creek.

The selection of these locations indicates that USEPA does not have an understanding of local hydrology. These locations cannot be considered “upstream” and may be better characterized as “downstream.” When it contains water, there is not a predominant north to south flow through the Borrow Pit Lake. Water essentially stands still or is subject to general wind mixing in this shallow intermittent pond. There is little or no flow from Dead Creek toward Old Prairie du Pont Creek. Such flow probably occurs only during flood events.

The background locations selected by USEPA are essentially downstream of the PPE they identified in CS-F. Even if the flow regime they erroneously described was correct, sample location BPL-ESED-S3 is still downstream of the confluence of CS-F and the borrow pit wetland. Therefore, USEPA has not correctly documented an observed release for Sauget Area 1.

1.2.3.2 USEPA did not Document the Comparability of the Release and Background Samples

USEPA (1992b) Guidance for Performing Site Inspections Under CERCLA requires that:

Samples to establish background must be the same type as the samples collected to test surface water release hypotheses or targets exposed to contamination. [p. 69]

The guidance states that "Grain size, organic content, and structure of sediments" are quantitative measures that should be evaluated to establish comparability of sediments used to define background and release locations. In the Sauget Area 1 HRS, USEPA did not document or establish that the background and release samples were comparable and did not present quantitative measurements in the HRS report for grain size or total organic carbon for these sediments. Non-comparable background and release samples are not applicable to establish an observed release.

1.2.3.3 USEPA did not Account for Other Upstream Sources of Contaminants to CS-F

The HRS Documentation Package presumes that the natural flow in Dead Creek is from B through F. Such flow may occasionally occur during periods of high rainfall. However, in the absence of high levels of precipitation, little or no surface flow reaches Creek Segment F from Creek Segments B through E. During the course of our observations made over the last several years, we have rarely seen standing water in the lower parts of Creek Segment E where it enters Creek Segment F. Instead, the intermittent flows that reach Creek Segment F primarily come from an entirely different source, releases of water from the Phillips Pipe Line Company property on the north side of Cargill Road as shown on Figure 2. Based on our observations, such releases of water occur occasionally. At such times the water overtops a berm constructed on Phillips Pipe Line Company property. The water then passes beneath Cargill Road through what is referred to, for purposes of this report, as the "Phillips Culvert". Such a release of water from Phillips Pipe Line Company was documented in September 1999 and is show below:



When Phillips is not releasing water, the drainage along and under Cargill Road is dry. Intermittent flows observed in Creek Segment F during the past few years are more likely related to releases of water passing through the Phillips Culvert than to flows from Creek Segments B through E. This poorly recognized feature of the local surface water hydrology has two important implications for the HRS scoring.

The first is that the surface water body maintained on Phillips Pipe Line Company property is a more appropriate location for establishing background because it is truly upgradient of Dead Creek as opposed to the Borrow Pit locations which are downgradient. This upgradient sample would need to properly match sediment types to the release samples as this was poorly considered in the current HRS Documentation Package. The second is that because intermittent flow in Creek Segment F is fed by water crossing under Cargill Road via the Phillips Culvert, there may be other sources of the USEPA's "observed release" in Creek Segment F.

Water passing through the Phillips Culvert drains a substantial industrialized area. This area includes the Phillips Pipe Line Company facility, railroad tracks and industries that abutted the region historically referred to as the Cahokia Slough. Historical and current releases of contaminants to this drainage would reach Creek Segment F via transport through the Phillips Culvert.

One source not considered by USEPA for Creek Segment F and unrelated to Sauget Area 1 as defined in the HRS Documentation Package is the former truck washing operation that Rogers Cartage maintained on the Phillips Pipe Line Company property. Rogers Cartage is known to

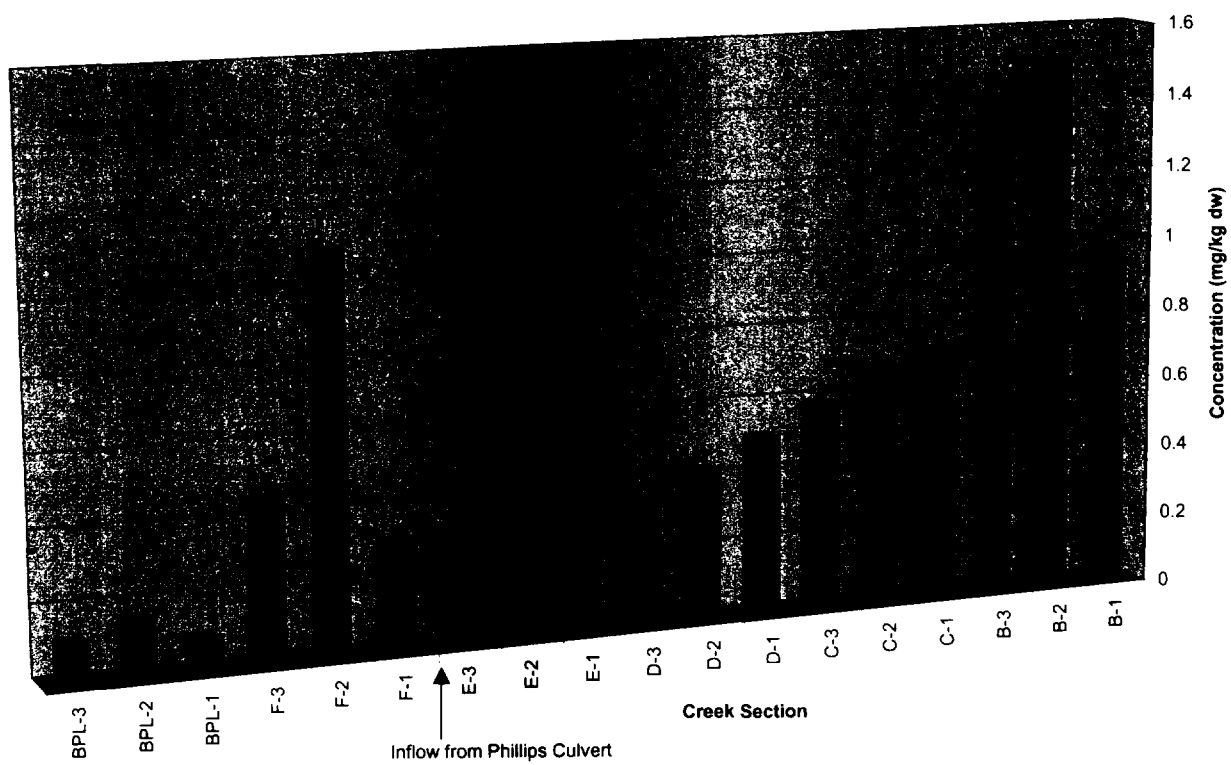
have hauled a wide variety of materials including those with elevated levels of organic chemicals (e.g., PCBs) and metals (e.g., mercury and zinc). Wash water monitoring data for Rogers Cartage taken during the 1990s from another location in Sauget show elevated levels of a number of metals. It is reasonable to expect that during its operations while located at the Phillips Pipe Line Company property, Rogers Cartage discharged organic chemicals such as PCBs, and metals such as zinc and mercury to waters that passed under Cargill Road via the Phillips Culvert. These contaminants would reach the head of Creek Segment F. USEPA appears to be unaware of this source and therefore has not considered that the samples used to support an "observed release" may actually be from a source other than those listed in the HRS Documentation Package. The remnants of the driveway coming off Cargill Road and concrete pads can still be observed:



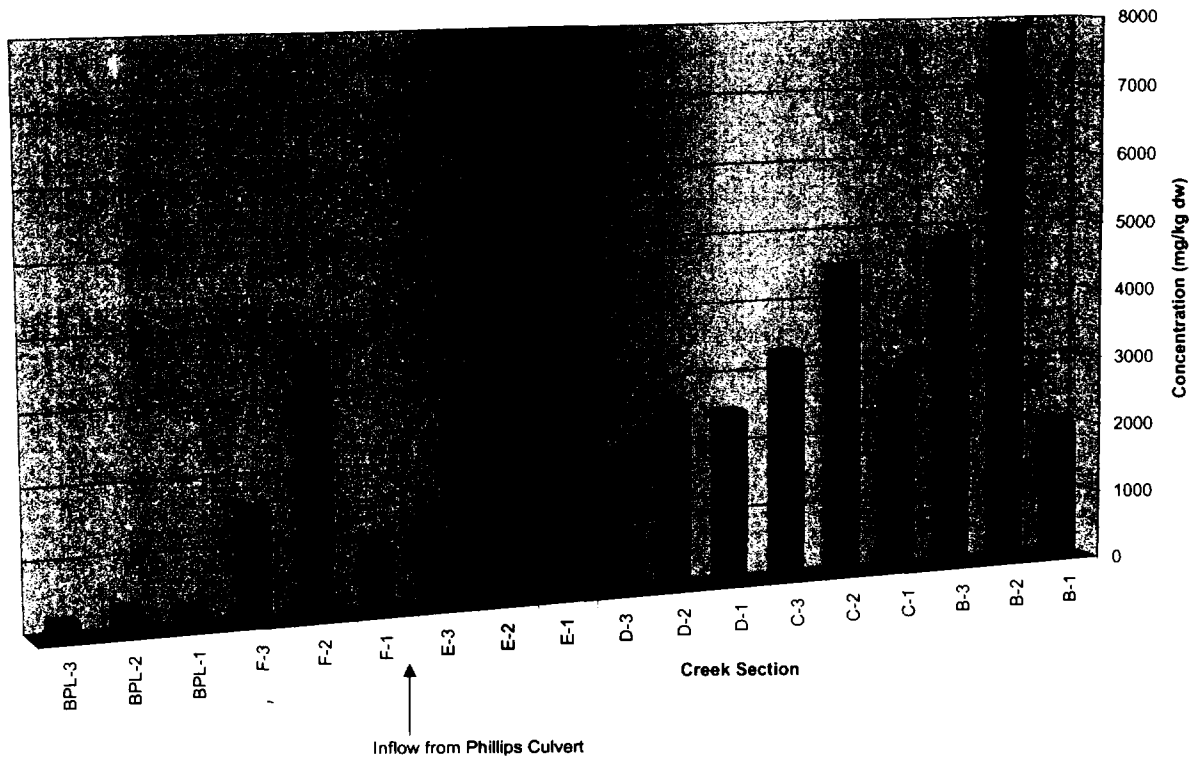
Surface drainage at this location is to the east and wash waters eventually drain to Dead Creek Segment F near where USEPA has selected its PPE.

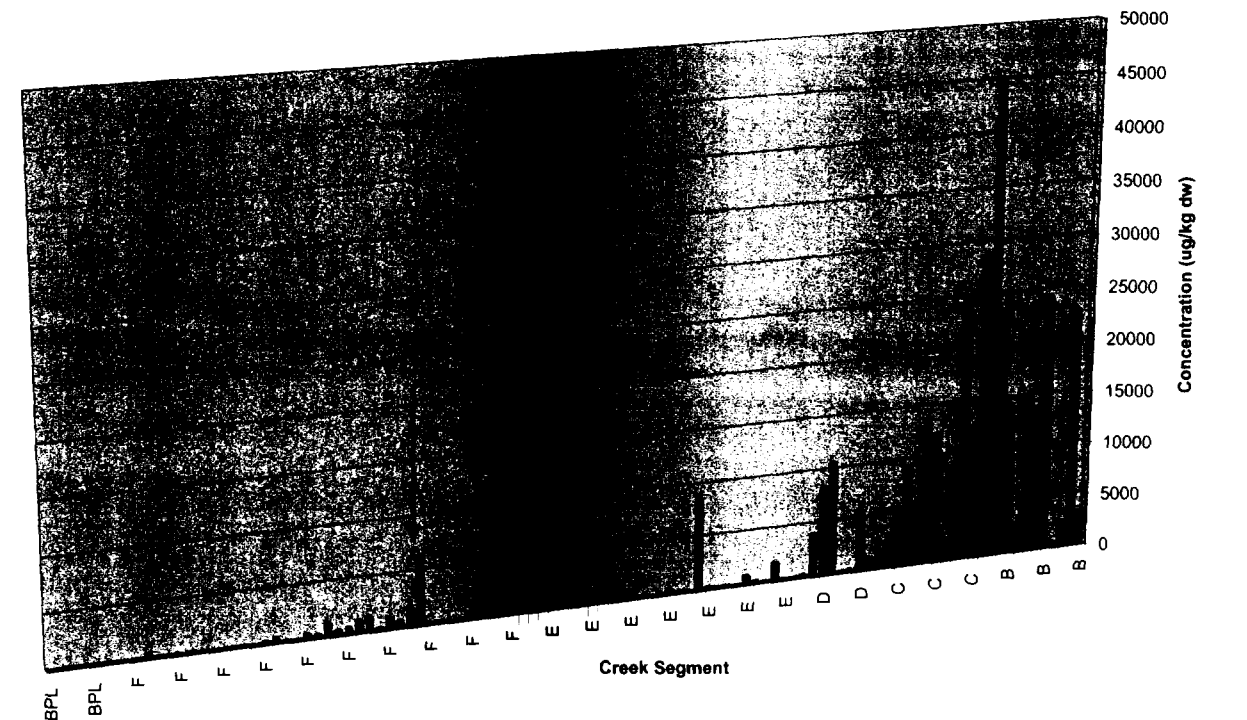
The possibility that Creek Segment F is influenced by a different source (i.e., historical inputs from Rogers Cartage) rather than from the sources identified in the HRS Documentation Package is suggested by the elevated levels seen in CS-F below the out-flow from Phillips (i.e., in the vicinity of the PPE identified by USEPA.) Examples of elevated levels in CS-F relative to what is seen further upgradient in CS-E include mercury, zinc, and PCBs as shown below:

Mercury in Dead Creek Ecological Sediment Samples, Sauget Area 1



Zinc in Dead Creek Ecological Sediment Samples, Sauget Area 1





1.3 Data Usability Assessment

As an associate of Menzie-Cura & Associates, Inc., Susan D. Chapnick, M.S., of New Environmental Horizons, Inc. (NEH) conducted a Data Usability Assessment of the sediment data collected by Ecology and Environment, Inc. (E&E) for USEPA and presented in Reference 65 of the HRS record, *Preliminary Ecological Risk Assessment for Sauget Area 1, Creek Segment F, Sauget, St. Clair County, Illinois* (report dated August 31, 1997). These sediment results were used by EPA to support an observed release by chemical analysis in the HRS (pp. 76-79).

Data usability is the process of assuring or determining that the quality of the data meets the needs for the intended use(s) of the data. The purpose of this data usability review was to determine the usability of the data for HRS scoring. The Data Usability Assessment is based upon the data and information included in HRS Documentation Record (including the supporting References), professional judgment, and the following EPA technical guidance documents:

1. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. USEPA Office of Solid Waste and Emergency Response, EPA-540/R-94-013, PB94-963502, February 1994.
2. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*. USEPA Office of Solid Waste and Emergency Response, EPA-540/R-94/012, PB94-963501, February 1994.
3. *Using Qualified Data to Document an Observed Release and Observed Contamination*. USEPA Office of Solid Waste and Emergency Response, EPA/540/F-94/028, PB94-963311, November 1996.
4. *Hazard Ranking System Guidance Manual*. USEPA Office of Solid Waste and Emergency Response, EPA 540-R-92-026, PB92-963377, November 1992. Interim Final.
5. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. USEPA Office of Solid Waste and Emergency Response, SW-836, Final Update 1996.
6. *USEPA Guidance for Performing Site Inspections Under CERCLA*. USEPA Office of Emergency and Remedial Response, EPA540-R-92-021, PB92963375, September 1992. Interim Final.

Specific results for chemicals used to determine the HRS for listing purposes must meet DUC-I and DUC-II level rigorous data quality requirements (pg. 100, *Guidance for Performing Site Inspections Under CERCLA*, USEPA 1992) as described in this report, below. Not all data used by USEPA for the Saugyet Area 1 HRS scoring were reviewed during NEH's assessment because the focus was on the data used to support the observed release by chemical analysis.

Though USEPA used the guidance document, *Using Qualified Data to Document an Observed Release* (USEPA 1996) in reporting the background and release data presented in the HRS tables (pp.77-79), they did not use *Guidance for Performing Site Inspections Under CERCLA* (USEPA 1992) to evaluate the data prior to application of the 1996 guidance. USEPA and their validation contractor did not measure the quality of the results against the stringent DUC level requirements defined in the *Guidance for Performing Site Inspections Under CERCLA* (USEPA 1992). Section 5.1, Review and Validate Analytical Data, in *Guidance for Performing Site Inspections Under CERCLA*, USEPA 1992, states that "the additive nature of QC factors out of specification is difficult to assess, but the reviewer should inform the user about data quality and limitations. This helps avoid applying the data inappropriately, while still allowing exclusion of the data." Furthermore, Section 5.2, Identify Analytical Data for Scoring, states "qualified data may be used only if the bias (unknown, low, high) associated with the data and the reasons for qualification are known. Some qualified data still may not be appropriate to develop a score for listing.....Analytical data of unknown quality are generally not adequate to score a site." USEPA makes the distinction between data quality required for scoring or listing a site (more stringent) and data quality required for screening investigations. USEPA defines data use categories (DUC) for screening and listing

sites. These are defined in Table 5-2 of the CERCLA guidance (USEPA 1992). For listing a site, the DUC-I is recommended for observed release as well as the DUC-II level.

1.3.1 USEPA Data Validation was Inadequate

USEPA's validation of 1997 E&E data did not adequately evaluate the data quality for the chemical analyses used to support the observed release. USEPA's validation contractor reviewed only a subset of method data quality control (QC) results for each analysis. The validation reports included in Reference 65 omit evaluation of key data quality indicators as listed below:

- PAH compounds by SW846 Method 8270 – missing evaluation of reporting limit verification, surrogate recoveries, laboratory control sample (LCS) recoveries, matrix spike/matrix spike duplicate (MS/MSD) recoveries, and MS/MSD relative percent difference (RPD).
- PCB/Pesticide compounds by SW846 Method 8081 – missing evaluation of reporting limit verification, laboratory control sample (LCS) recoveries, MS/MSD recoveries, and MS/MSD RPD.
- Metals by SW846 Methods 6010 and 7471 – missing evaluation of reporting limit verification, laboratory control sample (LCS) recoveries, MS recoveries, and sample/matrix duplicate (MD) RPD.
- No evaluation of RPD for Field Duplicate Precision for the field duplicate pair samples (F108 and F109) was presented in the validation reports.

The importance of these key data quality indicators are as follows. Reporting Limit Verification is critical in determining the sensitivity of the results and to evaluate the likelihood of false positives and false negatives. Surrogate recoveries are a critical component of data quality for organic analyses because they measure the accuracy of the method in quantitation of the compounds of concern in the actual field sample matrix. Laboratory Control Sample recoveries are used to prove that the laboratory can accurately identify and quantitate the compounds of concern in a "blank" matrix (i.e., no matrix interference) using the specified method. MS/MSD recoveries measure the accuracy of quantitation in the site matrix. The relative percent difference between these results, or between sample/MD results, is a measure of the precision of the analysis in the site matrix. Field duplicate precision is a key data quality indicator for overall precision and representativeness of a sampling/analysis program (see Table 5-1 of USEPA 1992, *Guidance for Performing Site Inspections under CERCLA*).

All these omitted QC elements are critical to a review of data quality, especially in complex matrices such as sediments. Sediments often require cleanups and dilutions due to interferences. These interferences will affect the sensitivity, accuracy, precision, and representativeness of the

chemical measurements. Therefore, the 1997 E&E data are unusable for the purposes of HRS scoring.

1.3.2 Additional Data Quality Issues

All results from the E&E report (1997) are in “wet weight” units. This is non-comparable to appropriate benchmarks, which are universally in “dry-weight” units (to account for varying percent solids and to normalize the data). The percent solids were not reported for these sediments. Sediments can have a wide range of percent solids that would affect the comparability of the background and release samples. The fact that the data were not reported in dry-weight units make the comparability of these sample results uncertain.

Additionally, total organic carbon (TOC) and grain size analysis, two critical measures in sediments used to determine comparability of background vs. release sample locations, were not performed or presented in the E&E report (Reference 65, 1997). The omission of TOC and grain size data adds further uncertainty to the comparability of the background and release sample data presented in the HRS pp. 77-79.

The mercury results are reported with the incorrect reporting level. Reference 65 lists an “SDL” (sample detection limit) lower than the “MDL” (method detection limit) for mercury. This is technically unfeasible using method SW846 Method 7471 – the sample detection limit cannot be lower than what the method could achieve in a “clean” matrix (which is what the MDL measures). Therefore, all “Sample Detection Limit” values for mercury in the tables included in the HRS, pp. 77-79, must be changed to 0.2 mg/Kg. Using this detection limit, the mercury results for samples F108 and F109 do not support an observed release because they are detected at levels less than the “SDL”, which is equivalent in definition to the “CRQL” in the USEPA guidance document 1996, *“Detection below the CRQL is treated as non-quantifiable for HRS purposes.”*

Because USEPA failed to adequately validate the data presented in the HRS pp.77-79, the comparability, accuracy, precision, representativeness, and sensitivity of the results are in question. Therefore, USEPA did not fulfill the requirement as stated in the Hazard Ranking System Guidance Manual, 1992 that “The data used to establish the release must be of known and documented quality.”

1.4 Landfills as Sources to Dead Creek Watershed

The underlying assumption that the sources in Sauget Area 1 contribute contaminants to the downstream wetland is erroneous. Floodplain soil data collected for the EE/CA indicate that overland flow from Dead Creek or Sites G, H, I, and L is not occurring. The floodplain surface soil data indicated that some contaminants also detected in Dead Creek sediment or Site G, H, I, and L surface soils were detected in the floodplain. However, only a few locations had

concentrations that exceeded ecological and human health risk benchmarks. The locations where concentrations exceed both screening values and background concentrations were scattered over the floodplain and did not exhibit a spatial pattern. There was no gradient of contaminants extending from the creek outward into the floodplain. Therefore, the screening analysis of floodplain soils does not indicate widespread migration of contaminants from the Sauget Area 1 sources to the floodplain.

1.5 Aggregation of Disparate Areas into a Single Site

The seven sources identified by USEPA in Sauget Area 1 should not be aggregated into a single site for several reasons. The sources in Sauget Area 1 are not owned and operated by the same entity, they were subject historically to different waste disposal practices, they represent different source types and two sources are not a source at all. One source has been cleaned up, and cleanup of another two sources will be completed shortly. For these reasons, separate source scores would more accurately reflect the hazards associated with each source. The resulting source scores are discussed in Section 2.2.1. Individual source scores decrease to 5.45 to 9.7.

1.5.1 Substances at Sauget Area 1 were not deposited using similar means of disposal

The sources in Sauget Area 1 are cleaned up creek sediments (Source 1), soon to be cleaned up creek sediments (Sources 2 and 3), landfills (Sources 4, 5, and 6), and a backfilled surface impoundment (Source 7). These sources were not part of the same operation that deposited similar substances using similar disposal practices.

1.5.2 Source 1 is no longer a source

Cleanup of Creek Segment A was completed in 1990. The sediments in Creek Segment A are not similar in source type to landfills or a backfilled impoundment and are no longer a source of contamination to Dead Creek or downstream wetlands.

1.5.3 Source 3 is not a Source

Creek Segments C, D, E, and the upper part of F are identified by USEPA as Source 3; however, the HRS Guidance states that water bodies such as rivers should not generally be considered as sources (p. 47). Furthermore, these creek segments were never modified to manage wastes. The HRS Guidance states that volumes of air, groundwater, surface water and surface water sediments are not considered sources (even if contaminated by migration of hazardous substances) (p. 49). Refer to Section 1.1.2.2 regarding USEPA misidentification of creek sediments as a source.

1.5.4 A single strategy for cleanup is not appropriate for all seven sources

Because the seven sources at Sauget Area 1 are different source types, they will likely require different cleanup strategies. Source 1 has already been cleaned up, and Sources 2 and 3 are in the process of being cleaned up. The type of cleanup that occurred or is occurring in these areas is different than the type of cleanup appropriate for landfills or backfilled surface impoundments that could involve containment measures such as capping and leachate collection.

1.6 Sensitive Environments

The HRS document does not follow the HRS Guidance in identifying Sensitive Environments. The Federal Register provides the Sensitive Environment Rating Values for the types of sensitive environments considered by the HRS scoring. The types of information to be considered in identifying these environments is given in the HRS Guidance (USEPA, 1992). In the Sauget Area 1 scoring document, USEPA did not follow this guidance in identifying "Habitat known to be used by Federal designated or proposed endangered or threatened species" or "Habitat known to be used by State designated endangered or threatened species. The guidance (p. A-9) states that the scorer must "...provide evidence that at least one member of the species is present in and is using the habitat within the (Target Distance Limit) TDL".

In the HRS Scoring document, USEPA identifies several state designated endangered or threatened species on the basis of inappropriate evidence. It identifies habitat of the state designated endangered black-crowned night heron on the basis of one observation of the species that was not in Sauget Area 1 (E&E, 1997). During a site visit in April 1997, a USEPA Region 5 ecologist noted "...three individuals at the northeast wetland extension above the confluence with Dead Creek." Based on this description, this location is off-site and likely on the Phillips Pipe Line Company property. Since this documentation is inappropriate for HRS scoring, the Sensitive Environment Value targets subject to Level II Concentrations for Sauget Area 1 drops from 50 to 0.

The HRS scoring document also identified many other sensitive species as being subject to potential contamination without properly providing evidence that at least one member of the species is present in and is using the habitat of Sauget Area 1. The evidence provided for eight of the thirteen species discussed in Section 4.1.4.3.1.3 of the HRS is state and Federal lists of endangered and threatened species that may be present in St. Clair County, Illinois or records of telephone conversations with state wildlife officials that occurred in 1993. The species for which improper documentation was provided are: the Indiana bat, Decurrent false aster, pallid sturgeon, cave snail, Illinois chorus frog, American bittern, pied-billed grebe, and river otter. The

documentation provided in the scoring does not provide evidence that these species are present on and using the habitat of Sauget Area 1.

Evidence is available for some of the species listed in the HRS Scoring document that indicates that they are not present and are not likely to be present at Sauget Area 1. The Indiana bat requires a habitat of small stream corridors with well-developed riparian woods and nearby upland forest. The wooded areas around Dead Creek and the Borrow Pit Lake are not well developed due to nearby residential and agricultural uses, and therefore, do not provide good habitat for the Indiana bat (U.S. Fish & Wildlife Service, Region 3, 1999). St. Clair County is not listed in the current distribution of the Indiana bat, shown in the U.S. Fish and Wildlife's list of Distribution of Threatened, endangered, and proposed Species in Illinois (U.S. Fish & Wildlife Service, Region 3, 1999). According to U.S. Fish and Wildlife's County Distributions of Federally listed species in Illinois, the Indiana bat has not been collected in St. Clair County (U.S. Fish and Wildlife Service, Region 3, 2001).

Pallid sturgeon have not been documented within the TDL in the Mississippi River. The documentation cited by USEPA in the scoring records (Ref. 15) also states that this species has not been documented in the area. Although the Mississippi River is considered to be in the pallid sturgeon's range, their population is very small, mainly because of alteration of habitat. The ideal habitats of sturgeon have a diversity of depths and flow velocities, braided channels, and sand and gravel bars and flats (U.S. Fish and Wildlife Service, Region 3, 1998). River habitats that have been altered by channels, dikes, and dams (such as the region of the Mississippi River along Sauget Area 2) no longer maintain the characteristics of habitats suitable for sturgeon (U.S. Fish and Wildlife Service, Region 3, 1998; U.S. Fish and Wildlife Service, Mountain-Prairie Region).

The cave snail is a Missouri listed endangered species and does not appear on species lists for Illinois (U.S. Fish and Wildlife Service 2001). Its range is restricted to Tumbling Creek Cave in Missouri and therefore, cannot be present on or use the habitat of Sauget Area 1 in Illinois (U.S. Fish and Wildlife Service, 2001).

Although the Illinois chorus frog occurs in some counties of Illinois, it is not documented as being present in St. Clair County (Phillips et al. 1999).

Although river otters are becoming more abundant in Illinois, it is unlikely that they are present at or make use of Sauget Area 1. The river otter population in Illinois is still fairly small, although it is increasing due to recovery efforts, in which otter from other states were released into Illinois waterbodies. The recovery efforts focused on the Wabash, Kaskaskia, and Illinois river basins, in central and southeastern Illinois (Illinois Department of Natural Resources. Species Accounts, additional otter information). Because recovery efforts took place in areas outside of St. Clair County, and otter populations before that were highest along the Mississippi River in northern Illinois, it is unlikely that Sauget Area 1 would have an otter population. The

river otter is not listed for St. Clair County in the U.S. Fish and Wildlife's County Distributions of Federally listed species (County Distributions of Federally listed species in Illinois, September 2001).

The occurrence of American Bittern in Illinois is rare, and they are found in marshes in northeastern and central Illinois (Illinois Natural Resources Information Network, Illinois Birds Species Profiles). The American Bittern has no confirmed breeding status in St. Clair County (Illinois Breeding Bird Atlas, American Bittern. Illinois Department of Natural Resources. 1998.)

Removing the eight species from the list of Sensitive Environments subject to Potential Contamination reduces the Sensitive Environment Value to 275 from 750. For the aggregated sources, the overall site score decreases from 9.7 to 4.81. For the more properly scored individual sources, the scores decrease to 2.73 to 4.85 (Section 2.2.5).

2.0 Re-Scoring of Sauget Area 1 Under the Hazard Ranking System Based on the Technical Comments

2.1 Re-Scoring for Aggregated Sources in Sauget Area 1

2.1.1 Scenario 1 - An observed release is not documented

According to the Hazard Ranking System (HRS) (USEPA, 1990, p. 51609), if an observed release cannot be established for the watershed, potential to release should be evaluated instead. Since USEPA improperly used samples from the Borrow Pit as "background" (Section 1.2.3) for evaluating the observed release described in the overland migration/flood component, we evaluate potential to release in this re-scoring scenario.

Therefore, we re-scored Area 1 making the following changes:

- a. the conditions for an observed release to surface water for the watershed are not met, therefore the site is re-scored based on "potential to release."
- b. The maximum potential to release by flood is assumed (USEPA, 1992, p. 206).

Scenario 1**Surface Water Overland/Flood Migration Component**

FACTORS	LIKELIHOOD OF RELEASE	WASTE CHARACTERISTICS	TARGETS	PATHWAY SCORE
PATHWAYS				
Drinking water (dw)	NS	NS	NS	NS
Food chain (fc)	500	320	3.10E-05	0.00
Environmental (env)	500	320	1.00E+01	19.39
Surface water (SW)				19.39

SITE SCORE = 9.70

Notes:

NS = Not Scored

Numbers in **bold** have changed from the original scoring values in the HRS Documentation for Area 1.

2.1.2 Scenario 2 - The Site is greater than 2 miles from a perennial water body and therefore an observed release is not documented

Also according to the HRS, a value of zero for the watershed should be assigned to the potential to release by overland flow component of the surface water migration pathway if:

- no overland segment of the hazardous substance migration path can be defined for the watershed, or;
- the overland segment of the hazardous substance migration path for the watershed exceeds two miles before surface water is encountered" (USEPA, 1990, p. 51609).

As discussed in Section 1.2.1 and 1.2.2, the calculated distances between potential site sources and Old Prairie du Pont Creek (the nearest perennial water body) are all greater than 10,560 feet, i.e., a distance of two miles.

Therefore, we re-scored Area 1 making the following changes:

- c. the conditions for an observed release to surface water for the watershed are not met because not observed release was documented in Old Prairie du Pont Creek, therefore the site is re-scored based on "potential to release."
- d. the overland segments for all of the sources (portion of the hazardous substance migration path from the source to a surface water body) are greater than two miles and we assign a value of zero for the potential to release by overland flow component (USEPA, 1990, p. 51609).
- e. the maximum potential to release by flood is assumed (USEPA, 1992, p. 206).

Scenario 2

Surface Water Overland/Flood Migration Component

FACTORS	LIKELIHOOD OF RELEASE	WASTE CHARACTERISTICS	TARGETS	PATHWAY SCORE
PATHWAYS				
Drinking water (dw)	NS	NS	NS	NS
Food chain (fc)	500	320	3.10E-05	0.00
Environmental (env)	500	320	1.00E+01	19.39
Surface water (SW)				19.39

SITE SCORE = 9.70

Notes:

NS = Not Scored

Numbers in **bold** have changed from the original scoring values in the HRS Documentation for Area 1.

Note that the scores for Scenario 1 and Scenario 2 are the same and well below the USEPA threshold for NPL listing of 28.5.

2.1.3 Scenario 3 - Creek Segments B through F are Being Cleaned up

We re-scored Area 1 making the following assumptions:

- Sources CS-B through CS-F have been removed and are not scored (like CS-A) as discussed in Section 1.1.1.
- Sites G, H, I and L are aggregated in the scoring.
- The conditions for an observed release are not met for the remaining aggregated sources (G, H, I and L).
- The same food chain and environmental targets are along the hazardous substance migration pathway from Sources G, H, I and L as for the site when CS-B through CS-F were scored.

The resulting site score using these assumptions is **9.7**.

Scenario 3

Surface Water Overland/Flood Migration Component

FACTORS	LIKELIHOOD OF RELEASE	WASTE CHARACTERISTICS	TARGETS	PATHWAY SCORE
PATHWAYS				
Drinking water (dw)	NS	NS	NS	NS
Food chain (fc)	500	320	3.10E-05	0.00
Environmental (env)	500	320	1.00E+01	19.39
Surface water (SW)				19.39

SITE SCORE = 9.70

Notes:

NS = Not Scored

Numbers in **bold** have changed from the original scoring values in the HRS Documentation for Area 1.

2.1.4 Scenario 4 - Documentation for some sensitive environments are insufficient

The references USEPA used to define sensitive environments in the HRS Documentation were not site-specific as discussed in Section 1.6. For example, USEPA cites a report by E&E (1997) which states that the black-crowned night heron (a state listed endangered species) was seen near, but not on the site. Also, USEPA uses an Endangered Species List for the State of Illinois to characterize sensitive environments subject to potential contamination. However, eight out of the thirteen species listed are not documented as using Area 1.

Therefore, we re-scored Area 1 making the following changes:

- Exclude habitat known to be used by the black-crowned night heron (i.e. sensitive environment) from the environmental threat – targets score.
- Only score habitat known to be used by bald eagle, little blue heron, snowy egret, yellow crowned night heron, and common moorhen as sensitive environments in the environmental threat -targets score.

If we re-score Area 1 assuming no observed release, the site score decreases to 4.85.

Scenario 4

Surface Water Overland/Flood Migration Component

FACTORS	LIKELIHOOD OF RELEASE	WASTE CHARACTERISTICS	TARGETS	PATHWAY SCORE
PATHWAYS				
Drinking water (dw)	NS	NS	NS	NS
Food chain (fc)	500	320	3.10E-05	0.00
Environmental (env)	500	320	5.00E+00	9.70
Surface water (SW)				9.70

SITE SCORE = 4.85

Notes:

NS = Not Scored

Numbers in **bold** have changed from the original scoring values in the HRS Documentation for Area 1.

2.2 The sites should be disaggregated

2.2.1 *Scenario 5 – An Observed Release was not documented*

Assuming that the sources are not aggregated as discussed in Section 1.5, we scored each source in Area 1 individually making the following changes:

- The conditions for an observed release are not met at any of the sources. Instead, we assign the maximum “Likelihood of release” score of 500 for each source.
- CS-B is contaminated soil, not a surface impoundment.

The table below summarizes the scores for each site when the changes described above for scenario 7 are made.

Scenario 5 – Each Source scored individually for CS-B; CS-C, CS-D, CS-E and CS-F to the PPE; G; H; I

Surface Water Overland/Flood Migration Component

FACTORS	LIKELIHOOD OF RELEASE	WASTE CHARACTERISTICS	TARGETS	PATHWAY SCORE
PATHWAYS				
Drinking water (dw)	NS	NS	NS	NS
Food chain (fc)	500	180	3.10E-05	0.00
Environmental (env)	500	180	1.00E+01	10.91
Surface water (SW)				10.91

**INDIVIDUAL SITE
SCORE FOR
SOURCES 2, 3, 4, 5,
AND 6 = 5.45**

Notes:

NS = Not Scored

Numbers in **bold** have changed from the original scoring values in the HRS Documentation for Area 1.

Scenario 5 – Site L scored individually

Surface Water Overland/Flood Migration Component

FACTORS	LIKELIHOOD OF RELEASE	WASTE CHARACTERISTICS	TARGETS	PATHWAY SCORE
PATHWAYS				
Drinking water (dw)	NS	NS	NS	NS
Food chain (fc)	500	320	3.10E-05	0.00
Environmental (env)	500	320	1.00E+01	19.39
Surface water (SW)				19.39

**INDIVIDUAL SITE
SCORE FOR
SOURCE 7 = 9.70**

Notes:

NS = Not Scored

Numbers in **bold** have changed from the original scoring values in the HRS Documentation for

Area 1.

2.2.2 Scenario 6 - Creek Segments B through F are Being Cleaned up

We scored Area 1 making the following changes:

- a. Sources CS-B through CS-F have been removed and are not scored (like CS-A).
- b. Sources G, H, I and L are disaggregated and scored individually.

If an observed release cannot be established, the individual source score becomes **5.45** for Sources G, H and I and **9.7** for Source L (as shown for Scenario 5 above).

2.2.3 Scenario 7 - Creek Segment B is not a Surface Impoundment

When we score Creek Segment B alone and as contaminated soil rather than a surface impoundment and conditions for an observed release are not met, the score is **5.45**.

2.2.4 Scenario 8 – Documentation for some sensitive environments are insufficient and an Observed release was not documented.

We re-scored each source in Area 1 individually, making the following changes:

- a. Re-score the site based on “potential to release” since the conditions for an observed release to surface water for the watershed are not met.
- b. Exclude habitat known to be used by the black-crowned night heron (i.e. sensitive environment) from the environmental threat – targets score.
- c. Only score habitat known to be used by bald eagle, little blue heron, snowy egret, yellow crowned night heron, and common moorhen as sensitive environments in the environmental threat -targets score.

Scenario 8 – Individual scores for CS-B; CS-C, CS-D, CS-E and CS-F to the PPE; G; H; I

Surface Water Overland/Flood Migration Component

FACTORS	LIKELIHOOD OF RELEASE	WASTE CHARACTERISTICS	TARGETS	PATHWAY SCORE
PATHWAYS				
Drinking water (dw)	NS	NS	NS	NS
Food chain (fc)	500	180	3.10E-05	0.00
Environmental (env)	500	180	5.00E+00	5.45
Surface water (SW)				5.45

**INDIVIDUAL SITE
SCORES FOR
SOURCES 2, 3, 4, 5,
AND 6 = 2.73**

Notes:

NS = Not Scored

Numbers in **bold** have changed from the original scoring values in the HRS Documentation for Area 1.

Scenario 8 – Site L scored individually

Surface Water Overland/Flood Migration Component

FACTORS	LIKELIHOOD OF RELEASE	WASTE CHARACTERISTICS	TARGETS	PATHWAY SCORE
PATHWAYS				
Drinking water (dw)	NS	NS	NS	NS
Food chain (fc)	500	320	3.10E-05	0.00
Environmental (env)	500	320	5.00E+00	9.70
Surface water (SW)				9.70

**INDIVIDUAL SITE
SCORE FOR
SOURCE 7 = 4.85**

Notes:

NS = Not Scored

Numbers in **bold** have changed from the original scoring values in the HRS Documentation for Area 1.

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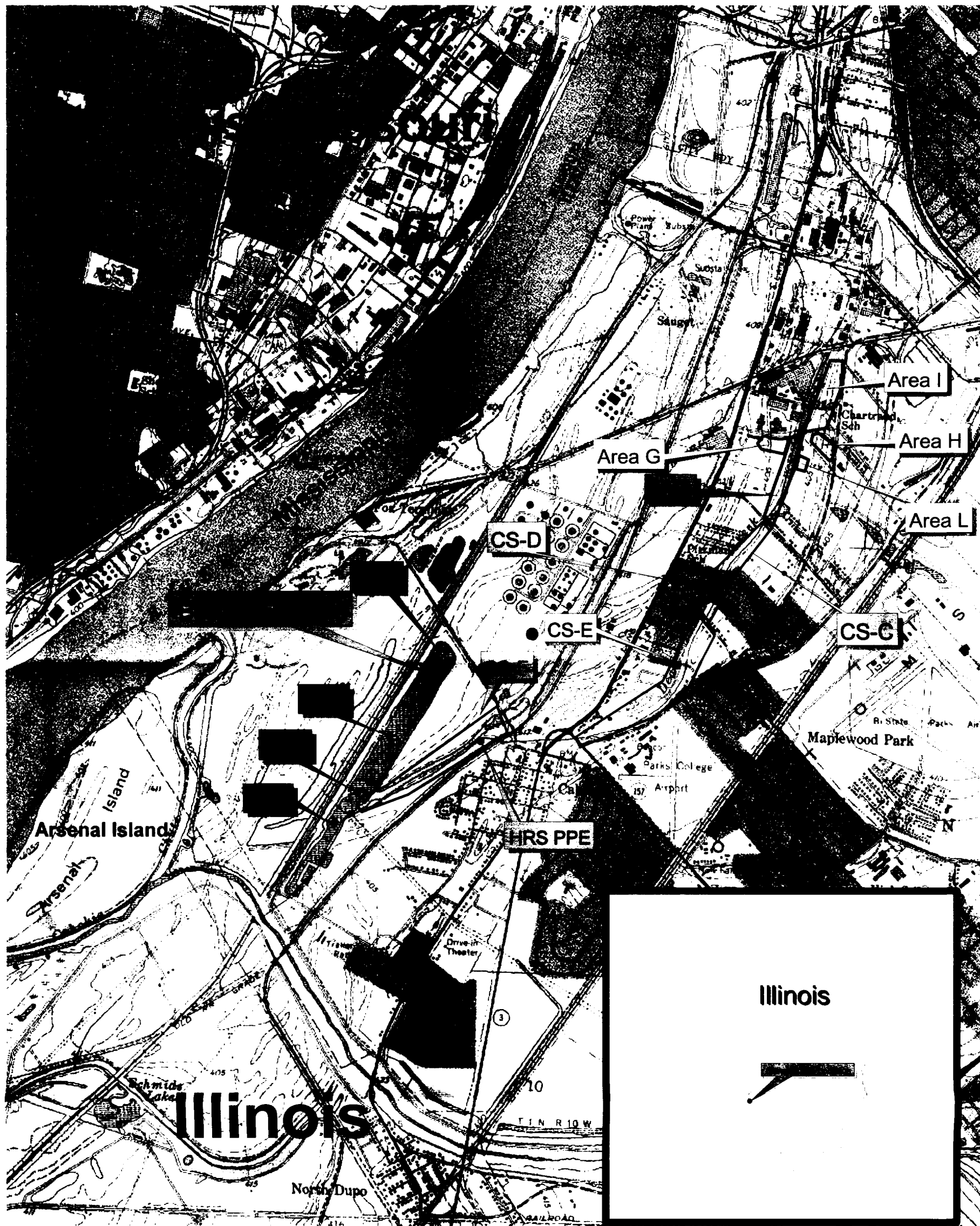
http://midwest.fws.gov/endangered/Snails/tcca_fct.html

U.S. Fish and Wildlife Service, Region 3. Decurrent False Aster.

<http://midwest.fws.gov/Endangered/plants/decurrefa.html>

FIGURES

Figure 1 Site Locations
Sauget Area 1
Sauget, Illinois



Note: site boundary locations are approximate

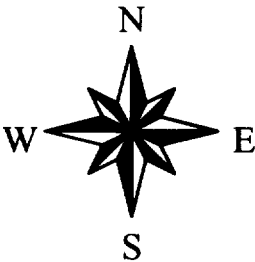
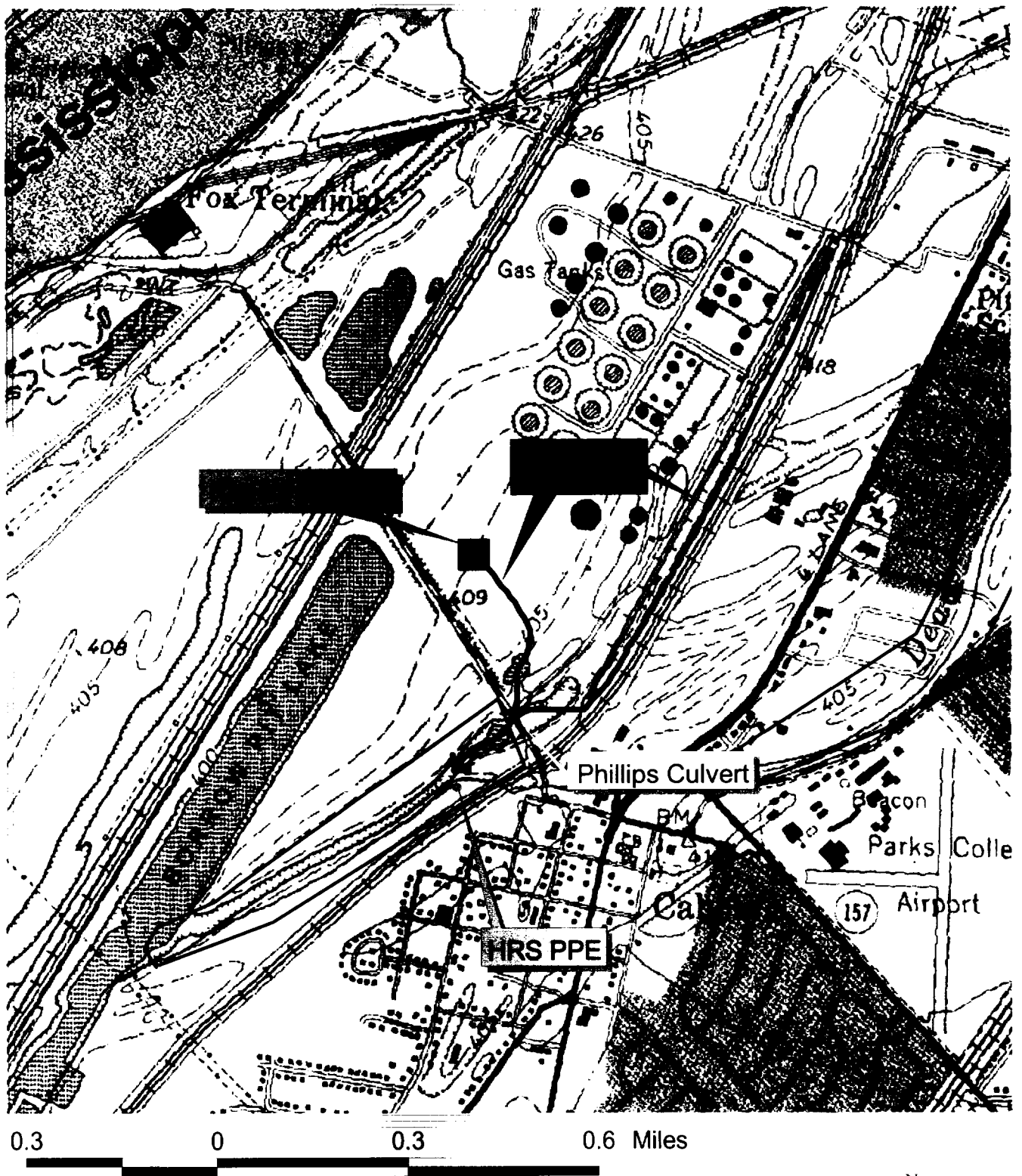


Figure 2 Potential Non-Dead Creek Sources to CS-F
Sauget Area 1
Sauget, Illinois



Note: locations are approximate